

WHAT IS CLAIMED IS:

1. An anodic bonding method comprising the steps of:
 - forming a soft metal layer on a surface of a conductor layer or a semiconductor layer;
 - forming an active metal layer on the soft metal layer, the active metal layer having a higher activity with oxygen than the soft metal layer; and
 - heating the active metal layer and the glass layer that are brought into contact with each other while applying a DC voltage, using the conductor layer or the semiconductor layer as an anode and the glass layer as a cathode, between the anode and the cathode, thereby bonding the glass layer to the conductor layer or the semiconductor layer.
2. An anodic bonding method according to claim 1, wherein a pure metal film of Au, Ag, Cu, Ni, Pt, Pd, Pb, or Sn, or a stacked film of a plurality of the pure metals, or an alloy film thereof is used as the soft metal layer.
3. An anodic bonding method according to claim 1, wherein a pure metal film comprising at least one of Al, Cr, Ti, V, and W, or an alloy film containing at least one of the pure metals is used as the active metal film.
4. An anodic bonding method according to claim 1, wherein a metal layer comprising at least one of Al, Ti, Cr, V, and W is formed between the conductor layer or the semiconductor layer and the soft metal layer in order to improve adhesion therebetween, and a metal film comprising at least one of

Cu, Ni, Pt, Pd, Ti, and Cr is formed between the soft metal layer and the active metal layer in order to prevent diffusion and reaction therebetween.

5. An anodic bonding method according to claim 1, wherein a bonded face of
s the glass layer is roughened.
6. An anodic bonding method according to claim 1, wherein a Si layer is used
as the conductor layer or the semiconductor layer.
- 10 7. An electronic device having a structural body in which a metal layer softer
than a conductor layer or a semiconductor layer is formed on a surface of the
conductor layer or the semiconductor layer, an active metal layer having a
high reactivity with oxygen is formed on the soft metal layer, and the active
metal layer and the glass layer are brought into contact with each other for
15 anodic bonding,
wherein a Si layer is used as the conductor layer or the semiconductor
layer, a light emitting device or a photo-receiving device is mounted on the Si
layer, and a lens or sealing glass as the glass layer is anodically bonded to
the Si layer.
- 20 8. An electronic device according to claim 7, wherein the soft metal layer is
deformed to improve the adhesion with the glass layer, and bonding is
performed by chemical bonding between the active metal layer and the glass
layer, and electrostatic bonding between the glass layer and the conductor or
25 the semiconductor layer.

9. An electronic device having a bonded body in which a soft metal layer is formed on the surface of a conductor or a semiconductor layer, an active metal having a higher activity with oxygen than the soft metal layer is formed
5 on the soft metal layer, the active metal layer and the glass layer are heated in contact with each other, and a DC voltage is applied, using the conductor layer or the semiconductor layer as an anode and the glass layer as a cathode, between the anode and the cathode, thereby bonding the glass layer to the conductor layer or the semiconductor layer.

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10. An electronic device according to claim 9, wherein a pure metal film of Au, Ag, Cu, Ni, Pt, Pd, Pb, or Sn, or a stacked film of a plurality of the pure metals, or an alloy film thereof is used as the soft metal layer.

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11. An electronic device according to claim 9, wherein a pure metal film comprising at least one of Al, Cr, Ti, V, and W, or an alloy film containing at least one of them is used as the active metal film.

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12. An electronic device according to claim 9, wherein a metal layer comprising at least one of Al, Ti, Cr, V, and W is formed between the conductor layer or the semiconductor layer and the soft metal layer in order to improve adhesion therebetween, and a metal film comprising at least one of Cu, Ni, Pt, Pd, Ti, and Cr is formed between the soft metal layer and the active metal layer in order to prevent diffusion and reaction therebetween.

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13. An electronic device according to claim 9, wherein a bonded face of the glass layer is roughened.

14. An electronic device according to claim 9, wherein a Si layer is used as
5 the conductor layer or the semiconductor layer.